

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) A method of generating a synthetic key frame, comprising the steps of:

receiving a video stream from a first source and dividing ~~[[it]]~~ the video stream into ~~meaningful~~ a plurality of sections;

selecting one of a key frame(s) or frame and a key region(s) representative of a ~~divided section~~ region from each of the plurality of sections; and

combining the selected key frame(s) or key region(s), to generate ~~one~~ one of the key frame and the key region from each of plurality of sections to form a synthetic key frame.

2. (Currently Amended) The method of generating a synthetic key frame as claimed in claim 1, wherein the dividing step further comprises the step of comprising receiving a video stream from a second source and dividing ~~[[it]]~~ the video stream from the second source into ~~meaningful~~ a plurality of sections.

3. (Currently Amended) The method of generating a synthetic key frame as claimed in claim [[1]] 2, ~~wherein the selecting step further comprises the step of~~ further comprising selecting one of a key frame(s) or frame and a key region(s) region output from the second source.

4. (Original) The method of generating a synthetic key frame as claimed in claim 1, wherein the section is a unit of segment.

5. (Currently Amended) A method of describing synthetic key frame data, comprising ~~the steps of~~:

dividing a video stream into ~~meaningful~~ a plurality of sections, and synthesizing one of a key frame [[or]] and a key region representing [[the]] content of each section into one image, to generate a synthetic key frame; and

describing a list of key frame and/or key region included in constituent elements of the synthetic key frame.

6. (Currently Amended) A method of describing synthetic key frame data as claimed in claim 5, wherein the describing [[step]] includes:

an ID for identifying the synthetic key frame;

a representative segment locator which describe the temporal information of the segment that the synthetic key frame represent; and

one of a key frame list ~~[[or]]~~ and a key region list for identifying the elements of the synthetic key frame;

wherein the describing ~~step can~~ additionally ~~include~~ includes:

a fidelity value indicating how faithfully the synthetic key frame represent the segment, and

information on the arrangement of each constituent element when the key frame or key region is displayed as the constituent element of the synthetic key frame.

7. (Original) A method of describing synthetic key frame data as claimed in claim 6, wherein the information about the arrangement includes two-dimensional location information of the constituent element or layer information as three-dimensional location information of the constituent element.

8. (Original) A method of describing synthetic key frame data as claimed in claim 5, wherein, when the synthetic key frame includes the key frame list, each element of the key frame list has a key frame locator as a key frame description unit structure and, when the

synthetic key frame includes the key region list, each element of the key region list has a key region locator as a key region description unit structure.

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9. (Original) A method of describing synthetic key frame data as claimed in claim 8, wherein the key frame locator includes an image locator capable of containing the location, annotation and a related segment with respect to a stored image, as data for designating the key frame, a segment locator for indicating information including a segment locator that designates a segment represented by corresponding key frame, and additionally a fidelity value indicating how faithfully the key frame represents the segment.

10. (Currently Amended) A method of describing synthetic key frame data as claimed in claim 8, wherein the key region locator, serving as a data structure for describing the key region, is information logically/physically designating stored one of location ~~[[or]]~~ and segment data, wherein the key region locator includes an inherent ID for identifying the key region;

an image locator and region area info to locate the one of region ~~[[or]]~~ and region data to locate the region; and

a representative segment locator;

wherein the key region locator ~~[[can]]~~ additionally ~~include~~ includes a fidelity value indicating how faithfully the key region represents the segment;

an annotation; and

a list of related segment with the key region.

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11. (Currently Amended) A method of describing synthetic key frame data as claimed in claim 5, wherein, when the synthetic key frame includes the key frame list, each component of the key frame list has fidelity indicating how faithfully corresponding key frame represents the meaningful content in the synthetic key frame, as a key frame description unit structure, and, when the synthetic key frame includes the key region list, each component of the key region list has a fidelity value indicating how faithfully corresponding key region represents the meaningful content in the synthetic key frame, as a key region description unit structure.

12. (Currently Amended) A method of describing synthetic key frame data, comprising ~~the steps of~~:

dividing a video stream into ~~meaningful~~ a plurality of sections, and synthesizing one of a key frame ~~[[or]]~~ and a key region representing ~~[[the]]~~ content of each section into one image, to generate a synthetic key frame; and

generating a combination of one of key frames ~~[[or]]~~ and key regions, or key frame and key region included in constituent elements of the synthetic key frame, and physically storing the combination to describe the synthetic key frame.

13. (Currently Amended) A method of describing synthetic key frame data as claimed in claim 12, wherein the synthetic key frame description includes:

an ID for identifying the synthetic key frame;

an image locator for designating the stored synthetic key frame file;

~~an ID for identifying the synthetic key frame;~~

[[an]] a representative segment locator which describe the temporal information of the segment that the synthetic key frame represent; and

A4 key region list for identifying the elements of the synthetic key frame; wherein the description [[can]] additionally includes:

a fidelity value indicating how faithfully the synthetic key frame includes section information about a segment represented by the synthetic key frame

and information on the arrangement of the key frame and key region that are the constituent elements of the synthetic key frame.

14. (Original) A method of describing synthetic key frame data as claimed in claim 12, wherein each element of the key region list of the synthetic key frame constituent elements has a key frame locator or a key region locator.

15. (Currently Amended) A method of describing synthetic key frame data as claimed in claim 14, wherein the key region locator, serving as a data structure for describing the key region, is information logically/physically designating stored one of location ~~[[or]]~~ and segment data, the key region locator includes:

an inherent ID for identifying the key region, an image locator and region area info to locate the region or region data to locate the region; and

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a representative segment locator;

wherein the key region locator ~~[[can]]~~ additionally ~~include~~ includes:

a fidelity value indicating how faithfully the key region represents the segment;

an annotation; and

a list of related segment with the key region.

16. (Original) A method of describing synthetic key frame data as claimed in claim 13, wherein each element of the key region list includes a fidelity value indicating how faithfully corresponding key region represents the meaningful content in the synthetic key frame, as a key region description unit structure.

17. (Currently Amended) A method of describing synthetic key frame data as claimed in claim 13, wherein the information about the arrangement includes one of two-dimensional location information of the constituent elements ~~[[or]]~~ and layer information that is three-dimensional location information of the constituent elements.

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18. (Currently Amended) A hierarchical video summarizing method using a synthetic key frame, comprising ~~the steps of~~:

dividing a video stream into ~~meaningful~~ a plurality of sections, and synthesizing one of a key frame ~~[[or]]~~ and a key region representing ~~[[the]]~~ content of each section into one image, to generate a synthetic key frame; and

assigning the synthetic key frame to a key image locator, a hierarchical summary list for describing lower summary structures, and structural information of the video stream.

19. (Original) The hierarchical video summarizing method using a synthetic key frame as claimed in claim 18, wherein the key image locator is a data structure for designating an image using a key region locator, a key frame locator and a synthetic key frame locator.

20. (Original) The hierarchical video summarizing method using a synthetic key frame as claimed in claim 18, wherein each hierarchical summary structure is represented by an image representative of a specific segment.

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21. (Original) The hierarchical video summarizing method using a synthetic key frame as claimed in claim 18, wherein each component of the lower hierarchical summary list uses a hierarchical/recursive summary structure as a lower hierarchical summary structure.

22. (Original) The hierarchical video summarizing method using a synthetic key frame as claimed in claim 18, wherein the hierarchical summary structure has summary level information.

23. (Original) The hierarchical video summarizing method using a synthetic key frame as claimed in claim 18, wherein the hierarchical summary structure includes a fidelity value indicating how faithfully a part, represented by the lower hierarchical summary list, is expressed.

24. (Currently Amended) A method for providing a video browsing interface, comprising:

dividing a video stream into ~~meaningful~~ a plurality of sections, and synthesizing one of a key frame ~~[[or]]~~ and a key region representing ~~[[the]]~~ content of each section into one image, to generate a synthetic key frame; and

providing a user interface to a predetermined display to browse a video related with the generated synthetic key frame.

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25. (Original) The method for providing a video browsing interface as claimed in claim 24, wherein the user interface provides the synthetic key frame in the form of view.

26. (Original) The method for providing a video browsing interface as claimed in claim 24, wherein the synthetic key frame is arranged in a time sequence, and the synthetic key frame is arranged in a tree shape.

27. (Original) The method for providing a video browsing interface as claimed in claim 24, wherein the synthetic key frame is assigned to each node in TOC form.

28. (Currently Amended) A non-linear video browsing method, comprising the steps of:

dividing a video stream into ~~meaningful~~ a plurality of sections, and synthesizing one of a key frame ~~[[or]]~~ and a key region representing ~~[[the]]~~ content of each section into one image, to generate a synthetic key frame; and

providing a user interface to a predetermined display to browse a video related with the generated synthetic key frame;

selecting the synthetic key frame according to an input by a user; and
reproducing a segment represented by the selected synthetic key frame.

29. (Currently Amended) The non-linear video browsing method as claimed in claim 28, wherein the reproducing ~~[[step]]~~ reproduces a segment related with constituent elements (one of key region ~~[[or]]~~ and key frame) of the contents of one of the key frame ~~[[or]]~~ and the key frame selected by the user's input.

30. (New) The method of generating a synthetic key frame as claimed in claim 1, wherein the synthetic key frame includes one of a selected key frame and a selected key region from each of the plurality of sections.

31. (New) The method of generating a synthetic key frame as claimed in claim 1, wherein each of the plurality of sections comprises a video frame, and the selected one of the key frame and the key region comprises a portion of the video frame.

32. (New) The method of describing synthetic key frame data as claimed in claim 5, wherein the synthetic key frame includes one of a selected key frame and a selected key region from each of the plurality of sections.

A5 33. (New) The method of describing synthetic key frame data as claimed in claim 32, wherein each of the plurality of sections comprises a video frame, and the selected one of the key frame and the key region comprises a portion of the video frame.

34. (New) The method of describing synthetic key frame data as claimed in claim 12, wherein the synthetic key frame includes one of a selected key frame and a selected key region from each of the plurality of sections.

35. (New) The method of describing synthetic key frame data as claimed in claim 34, wherein each of the plurality of sections comprises a video frame, and the selected one of the key frame and the key region comprises a portion of the video frame.

36. (New) The hierarchical video summarizing method of using a synthetic key frame as claimed in claim 18, wherein the synthetic key frame includes one of a selected key frame and a selected key region from each of the plurality of sections.

37. (New) The hierarchical video summarizing method of using a synthetic key frame as claimed in claim 36, wherein each of the plurality of sections comprises a video frame, and the selected one of the key frame and the key region comprises a portion of the video frame.

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38. (New) The method of providing a video browsing interface as claimed in claim 24, wherein the synthetic key frame includes one of a selected key frame and a selected key region from each of the plurality of sections.

39. (New) The method of providing a video browsing interface as claimed in claim 38, wherein each of the plurality of sections comprises a video frame, and the selected one of the key frame and the key region comprises a portion of the video frame.

40. (New) The non-linear video browsing method as claimed in claim 28, wherein the synthetic key frame includes one of a selected key frame and a selected key region from each of the plurality of sections.

A⁵ 41. (New) The non-linear browsing method as claimed in claim 40, wherein each of the plurality of sections comprises a video frame, and the selected one of the key frame and the key region comprises a portion of the video frame.
